



Article Corporate Sustainability and CEO–Employee Pay Gap—Buster or Booster?

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Abstract: There is a general agreement that extensive remuneration gaps may cause pressing environmental, social, and economic problems. Thus, a critical question to be answered is what is the effect of being at the forefront of corporate sustainability on the CEO–employee pay gap. This paper addresses the question by examining empirical evidence from 415 constituents of the S&P 1500 index over the years 2006–2016. For the above period, we found a positive relationship between a strong commitment to sustainable development at the firm level and the CEO–employee pay differential. Additionally, firms characterized by higher performance, growth potential, and financial robustness constituted more dispersed salary distribution environments. The findings also suggest that CEO gender has a significant effect on the pay gap with a moderating influence of female CEOs. The paper contributes to the literature by shedding additional light on the urgent need for the implementation of a limit capping the CEO–worker pay ratio at a certain, responsible level as one of screening criteria used by sustainability ranking providers. Furthermore, it also shows that leading corporations in the area of sustainability do not implement any serious solutions in the above area on their own accord.

Keywords: corporate sustainability; executive compensation; fairness; pay gap; corporate governance

1. Introduction

The fair distribution of wealth and income was already discussed in Classical Greece by Plato, who recommended that the wealthiest member of the society should not be more than four-times richer than the poorest one. The above was also necessary to prevent most fatal disorders and distractions connected with penury and opulence [1]. Therefore, a sensible income distribution structure should be introduced for strict ethical reasons and also from the self-interest of all main entities constituting a given society. More than 40 years ago, Peter Drucker argued that the maximum compensation of top corporate executives should be clearly determined by official firm policy and should not exceed the lowest paid regular full-time employee compensation by more than 25 times [2].

Excessive CEO pay becomes one of the central issues in the current corporate governance debate. The CEO-to-worker compensation ratio in the S&P 500 index firms increased from around 42:1 back in 1980 to an astonishing 347:1 in 2016 [3]. It is much more difficult to justify on the basis of the most important economic rationales, like increased value for shareholders, proper performance, and productivity incentives or the greater complexity and the risk of an executive working environment [4]. Furthermore, it is also exacerbated by the urgent need to address the increasing economic inequality in general, where the share of total income earned by the top one percent in the United States has been rising stably from around 7.8 percent in the early 1970s to around 20 percent in 2016 [5]. Finally, too

extensive pay inequality stands in contradiction to the general concept of sustainable development, as it constitutes a state that might no longer have the potential to serve human needs in the properly balanced fashion in the long run [6,7].

Equity issues are inextricably linked to economic, social, and environmental quality—three main objectives of the idea of sustainable development. As such, justice in the distribution of income is one of the central themes of sustainability. Thus, under the sustainability umbrella, remuneration decisions should be subject to detailed ethical and environmental considerations [8,9]. Furthermore, being at the forefront of corporate sustainability should have a profound impact on executive compensation and the pay differential between the CEO and the average worker.

In the past years, the research on the CEO–employee pay differential has expanded rapidly and substantially increased our knowledge of its behavioral and economic foundations [10], institutional and personal determinants [11,12], perceived scale [13], and possible influences on corporate financial performance and productivity [14,15]. Nonetheless, our knowledge and academic discussion of the possible influence of corporate sustainability perspective on the scale of the internal CEO–worker remuneration gap is still rather limited. Thus, to explore the topic and provide the missing empirical evidence on the issue, this article aims to address the following research question:

What is the nature of the relation between corporate sustainability and the CEO–employee pay differential?

This study derived its empirical evidence from the analysis of 415 constituents of the Standard and Poor's (S&P) 1500 index for which both executive and non-executive employee compensation data were available in the Compustat and the Standard and Poor's ExecuComp databases over the years 2006–2016. The main corporate sustainability criterion was inclusion in at least one of the following benchmarks: the Dow Jones Sustainability World Index (DJSI), the Fortune 500 World's Most Admired Companies list (FT 500), Newsweek's Top 100 Green Companies in the United States ranking (NW 100), or the UN Global Compact companies list (UNGCCL). The United States was selected for this study as the largest economy (with a GDP of almost \$18.5 trillion at the end of 2016) and the biggest stock market (with a total market capitalization of more than \$27.3 trillion at the end of 2016) in the world. In addition to the above, the S&P 1500 index covers almost 90% of the market capitalization of all United States equities.

The empirical results showed that being at the forefront of corporate sustainability is connected with a significantly higher pay differential between a company's CEO and its ordinary employees. Thus, the pay gap is not used as one of the criteria of the adoption of best practices in the areas of social and environmental management by the providers of the most popular global rankings. We also found that larger companies and those with higher ROEs, market valuations, and financial robustness are characterized by more dispersed salary distributions. Additionally, the CEO's gender had a significant effect on the pay gap with a moderating influence of female CEOs.

The remainder of this study is structured as follows. First, an overview of the existing literature on the importance of income equality in the sustainable development concept and its possible consequences for solving rising environmental and social problems is presented. On that basis, the main hypothesis is developed. Next, the data and the variables are described and an empirical model is formulated. The results are then presented and key findings are discussed. Finally, the key findings of the study are summarized and the implications for policy and business practice are drawn.

2. Theoretical Framework and Hypothesis Development

The identity of the sustainable development concept is multidimensional since it embraces environmental, social, economic, and institutional aspects at the same time. The first two of them refer to natural resources and human capital (skills, experiences, and motivations), while the latter two refer to all the economic activities and rules regulating the interactions between different members of society [6]. There are strong interlinkages between all of the above dimensions, and without their proper and systematic integration over the long term, the preservation of the viability of the overall system will be put at risk [16]. The above multidimensional approach is increasingly used in the investment decision-making processes [17,18]. Additionally, increasing number of investors also use negative screening approach to avoid investing in companies involved in scandals regarding irresponsible environmental, social or economic conduct [19].

In a world with finite resources, proper justice in the distribution of incomes becomes one of the central issues in solving pressing environmental, social, and economic problems [7]. For example, greater income equality can lead to an enhancement in the area of human capital and well-being in the form of increased life expectancy, education, and work motivation [20]. A more equal economic distribution also seems to constitute an essential component of reduced environmental degradation [21], as the richer, more satisfied, and better educated members of society also tend to have higher environmental concerns [22,23]. Furthermore, lower-income dispersion can also protect the firm's internal coherence, which might increase diffusion of experiential knowledge among employees [24]. Extensive income gaps may cause social deprivation and ecological indifference. There is ample evidence that wider political and economic inequalities result in a generally higher level of environmental harm. For example, Torras and Boyce [25] showed that a more equal income distribution tends to have a positive effect on the environmental quality (i.e., lower concentration of air and water pollutants and better access to clean water and sanitation) at the national level. Also, Morello-Forsh et al. [26] reported that higher levels of hazardous pollutants were connected with larger income dispersion at a local level. Finally, Heerink et al. [27] in their empirical analysis of the relation between various environmental indicators and income inequality at the national level, found that higher income inequality was connected with higher levels of CO₂ emissions, deforestation, and soil nutrient depletion. Thus, justice and income distribution equality issues constitute an important part of the wider sustainability concept [28].

Large inequalities in the distribution of income, which are not in line with the idea of sustainability, are social constructs [29]. As such, they can be effectively managed on the national, local, and firm levels. This requires a serious treatment of ethical and moral responsibility toward the internal and external circumstances. At the firm level, it can be seen as the integration of the concept of sustainable development into its core business strategy and decision-making processes [30]. Proper focus to multiply actor-networks and manage both the opportunities and the risks derived from economic, environmental, and social developments is a must, especially since too much focus on one-dimensional economic incentives may destroy the ecological, social, and systemic values among managers and hinder their commitment to ensure responsible business conduct [31]. The vast majority of corporate social and environmental responsibility concepts are strictly associated with the defense and enhancement of workers, communities, and other social groups' interests [32]. It is widely believed that sustainability by its relation to high morals and ethical norms improves social equality, especially when existing legal and institutional arrangements have proved insufficient [33]. Thus, a causal link between the practical implementation of the corporate sustainability concept and the level of internal remuneration equality (in the form of the existing pay gap between the CEO and the average worker) should be especially pronounced among most sustainability oriented firms.

Serious consideration of sustainability issues at the corporate level requires in-depth analysis of income equality issues, which involves levelling or minimizing unacceptable disparities and the practical promotion of fairness and social justice [34]. In this approach, strong commitment to sustainable development at the firm level can be regarded as a benchmark criterion distinguishing between corporate environments with lower and higher levels of tolerance for pay differentials. Therefore, we formulate the following hypothesis:

Hypothesis. *There is a negative relationship between being at the forefront of corporate sustainability and the CEO–employee pay differential.*

3. Data and Variables

The data for this study were derived from an investigation of all constituents of the Standard and Poor's 1500 index for which detailed executive compensation data for both the CEO and other executive officers were available in Standard and Poor's ExecuComp database over the years 2006-2016. The average worker salary and all the other financial data used in this paper were derived from the Compustat and Infront Analytics databases. Being at the forefront of corporate sustainability was measured by the inclusion of a given company in at least one of the following benchmarks: the Dow Jones Sustainability World Index, the Fortune 500 World's Most Admired Companies list, Newsweek's Top 100 Green Companies in the U.S. ranking, or the UN Global Compact companies list. We used the four different and very popular ratings mentioned above concurrently in order to form a complete picture of the ongoing developments in the area of corporate social and environmental responsibility as possible and to avoid omitting any possible distinctive and over-average activism.

The DJSI applies the component selection process based on the companies' total sustainability scores resulting from the annual corporate sustainability assessment. The assessment embraces between 80-120 industry-specific questions focusing on economic, environmental, and social factors that are relevant to the companies' success but that are under-researched in the conventional financial analysis. On the above basis, since 1999, the top 10% of the ranked companies from each industry are selected for inclusion in the Dow Jones Sustainability Index as the most sustainable ones. The FT 500 list consists of firms with outstanding reputations on the basis of the admiration of their employees, clients, and business world because of, among other factors, the quality of their management, employee talent, financial soundness, and social responsibility. It was first published in 2006. The NW 100 lists the top 100 particularly notable performers in the areas of environmental impact, green policies, and reputation score among the 500 largest U.S. companies based on their revenues, market capitalization, and number of employees. It looks at factors such as greenhouse gas emissions, water use, solid waste disposal, air pollution, toxic releases, environmental management, climate change mitigation and pollution policies, and environmental commitment and communication. It was first published in 2009. The UNGCCL, which launched in 2000 by the United Nations, is the world's largest voluntary network of companies and follows ten principles related to human rights, labor rights, environmental responsibility, the diffusion of environmentally friendly technologies, environmental protection, and social transparency.

The choice of the year 2006 as the starting point was determined by the increase in the general popularity of environmental and social responsibility concepts in the corporate world since that year and the availability of a sufficient diversity of firms in the rankings that provide data on the adoption of best practices in the area of corporate sustainability. Our sample consisted of 415 unique firms with a total of 3050 firm-year observations. Table 1 details the sample based on industry affiliation. The sectors of financials, industrials, and consumer discretionary are the most strongly represented in the sample, whereas telecommunications services, consumer staples, and materials are not well represented. The utilities sector is not represented at all. Since the sector of financials is relatively overrepresented (more than 57% of all firms), to ensure that our results are not driven by this particular industry, we performed separate analyses for it and for all the other non-financial firms (see the empirical results and Tables 5 and 6).

	Sector Code	All Companies	% of Full Sample	Most Sustainable Companies	% of Most Sustainable Companies Sample
Energy	10	8	0.019	1	0.017
Materials	15	5	0.012	1	0.017
Industrials	20	49	0.118	15	0.254
Consumer Discretionary	25	52	0.125	5	0.085
Consumer Staples	30	4	0.010	3	0.051

Table 1. Sample distribution

	Sector Code	All Companies	% of Full Sample	Most Sustainable Companies	% of Most Sustainable Companies Sample
Health Care	35	32	0.077	5	0.085
Financials	40	237	0.571	24	0.407
Information Technology	45	19	0.046	3	0.051
Telecommunication Services	50	3	0.007	0	0.000
Utilities	55	0	0.000	0	0.000
Real Estate	60	6	0.014	2	0.034
Total		415	1	59	1

Table 1. Cont.

3.1. Main Variables

In this paper, we decided to measure the compensation differential between the CEO and the average worker with the ratio of total CEO compensation (salary + bonus + other annual + restricted stock grants + long-term incentive plan payouts + all other + value of option grants) to the average ordinary employee's compensation (CEOTOT_OE). The latter was computed by dividing the total staff expenses by the number of employees. Table 2 presents the CEO–worker pay gap evolution over the years 2006–2016. For robustness purposes, we also calculated the average compensation of other top executive officers (OTEO) by dividing the total other executives (with clearly defined annual titles) remunerations disclosed in ExecuComp by the number of other executives. We then estimated the compensation differential between OTEO and the average worker (OTEOTOT_OE). We used the above variable as an additional measure of wage dispersion.

Table 2. CEO–worker pay gap evolution over time.

Year	No. of Observations	Mean	Median		
2006	280	103.098	47.808		
2007	330	98.138	36.696		
2008	314	79.080	30.580		
2009	315	69.921	29.951		
2010	313	84.859	35.253		
2011	310	85.870	38.396		
2012	306	93.788	37.984		
2013	303	90.336	41.056		
2014	300	91.535	43.515		
2015	296	89.152	45.335		
2016	263	91.439	48.265		

Being at the forefront of corporate sustainability was measured with the usage of the binary variable sustainability (SUSTAIN) that equals one if a company was included in a given year in at least one of the following rankings: the Dow Jones Sustainability World Index, the Fortune 500 World's Most Admired Companies list, Newsweek's Top 100 Green Companies in the U.S. ranking, or the UN Global Compact companies list; and zero otherwise. On the above basis, 59 companies were selected as the most sustainable ones (they were included in at least one of the rankings for at least one year). Table 1 details the above sample by industry affiliation. Corporations at the forefront of sustainability oriented activism are most strongly represented in the sectors of financials, industrials, consumer discretionary, and health care. They are much less present in the sectors of real estate, materials, and energy. There was not a single such company in telecommunication services or the utilities sector.

3.2. Control Variables

There are several variables that may affect the pay gap between the CEO and the average worker. For example, higher bargaining power of executives over the board may enable them to negotiate more favorable salary conditions in comparison to lower-level employees [35]. Thus, we control for

CEO–chair duality with the use of a binary variable (CEODUAL) that equals one when the CEO also serves as the chairman of the board and zero otherwise. Females are often characterized by a higher sensitivity to pay fairness than males [36,37]. To control for the above possibility, we control for the CEO's gender with a dummy variable (GENDER) that equals one if the CEO is female and zero otherwise. The CEO's age might also influence the executive pay in different ways. For example, older executives' earning profiles for both cash and bonuses decrease at about the age of 53–55 [38,39]. Furthermore, older executives might also be characterized by a more positive perception of pay equality since their professional careers began in a period of narrower income disparities in the corporate world. As a result, we included an additional control variable representing the chief executive's age (CEOAGE).

Existing empirical studies have also consistently documented that the levels of CEO pay increase with the increase in the general complexity of a company's operations, which is connected to its size, risk, growth opportunities, performance, sector affiliation, and R&D activism [10,15,40,41]. Following the above approaches, we control for firm size, which is measured as the natural logarithm of the book value of total assets (lnTA); risk, which is measured as the total debt divided by total assets (LEV) and the standard deviation of the monthly stock market returns over the preceding 36 months (RISK); growth opportunities, which is measured as the book value of equity divided by the market value of equity (BV_MV); performance, which is measured as the net income divided by the book value of equity (ROE); sector, which is measured by introducing a binary variable representing the firm's sector according to the two-digit GIC code (as stated in Table 1); and R&D activism, which is measured as the research and development expenses as a fraction of sales (RD_SALES).

4. Empirical Results

Table 3 presents a summary of the descriptive statistics for our sample of companies. The mean (median) CEO total compensation over the analyzed period was \$5.23 (\$3.12) million, with the corresponding number for the OTEO of \$2.90 (\$1.74). Moreover, the average (median) ordinary worker salary was \$97,646 (\$76,321). Thus, the mean (median) CEO–worker pay ratio was approximately 88.7 (38.3), and the OTEO-worker pay ratio was 46.3 (21.8). The average company in our sample had total assets of approximately \$67.556 billion, return on equity of 10.4%, a BV/MV ratio of 0.744, debt constituting around 29% of assets, and spent approximately 2.8% of sales for research and development. Around 47% of all CEOs in our full sample concurrently served as board chairs. The average chief executive officer was 62 years old, and women accounted for only approximately 3.8% of all CEOs.

Table 3 also shows a summary of the selected statistics for our samples of the most sustainable corporations and other companies listed in the S&P 1500 index. Firms being at the forefront of corporate sustainability are characterized by a significantly higher executive compensation in comparison to other firms (of around \$10.51 million in the case of the CEO and \$6.47 million in the case of the OTEO) and significantly higher ordinary employee remuneration (of around \$19,088). Furthermore, they also constitute much more unequal income distribution environments. The average CEO–worker pay ratio among them was approximately 2.73 times higher and the average OTEO-worker pay ratio was approximately 2.92 times higher than in the case of other firms. Compared with less sustainable firms, sustainable ones were generally much bigger, were characterized by significantly higher efficiency in the employment of the owners' capital, market valuation, and financial risk exposure and had significantly lower volatility of their monthly stock market returns over the preceding 36 months and research and development expenditures in relation to sales. Finally, CEOs of firms at the forefront of corporate sustainability concurrently serve as chairmen of the board much more often and are older than their counterparts among other firms. Surprisingly, there was not a single female among the chief executive officers of most sustainable corporations.

	Full Sample ($N = 415$)			A: Most Susta	A: Most Sustainable Companies (N = 59)			B: Other Companies (N = 356)			erence (A-B)
	No. of obs.	Mean	Median	No. of obs.	Mean	Median	No. of obs.	Mean	Median	Mean	Median
CEO total compensation (in thousands USD)	3330	5297.289	3117.634	208	15,152.849	13,026.618	3122	4640.673	2828.488	10,512.176 ***	10,198.130 ***
OTEO total compensation (in thousands USD)	3330	2897.819	1735.204	208	8964.738	7244.964	3122	2493.617	1611.477	6471.121 ***	5633.487 ***
Ordinary employee total pay (in thousands USD)	3330	97.646	76.321	208	115.542	99.953	3122	96.454	74.829	19.088 ***	25.124 ***
CEO total/Employee	3330	88.666	38.302	208	218.477	128.660	3122	80.018	35.455	138.460 ***	93.205 ***
OTEO total/Employee	3330	46.251	21.844	208	120.527	74.113	3122	41.302	20.414	79.225 ***	53.699 ***
Total Assets (in millions USD)	3330	67,556.279	5558.869	208	412,717.774	46,608.500	3122	44,560.253	5077.282	368,157.521 ***	41,531.218
Return on Equity	3330	0.104	0.097	208	0.183	0.115	3122	0.099	0.095	0.084 **	0.020
Book/Market	3126	0.744	0.635	203	0.677	0.536	2923	0.748	0.640	-0.072 **	-0.104 ***
Total Debt/Total Assets	3330	0.290	0.188	208	0.337	0.267	3122	0.287	0.181	0.051 ***	0.086 ***
Risk (SD monthly return)	3186	10.541	8.659	208	8.581	7.216	2978	10.678	8.726	-2.096 ***	-1.509 ***
Research and Development/Sales	3330	0.028	0.000	208	0.005	0.000	3122	0.029	0.000	-0.023 **	0.000
CEO-Chair Duality	3330	0.465	0.000	208	0.678	1.000	3122	0.451	0.000	0.227 ***	1.000 ***
Gender	3330	0.038	0.000	208	0.000	0.000	3122	0.040	0.000	-0.040 ***	0.000
CEO Age	3323	61.668	61.000	206	63.019	63.000	3117	61.578	61.000	1.441 ***	2.000 ***

Table 3. Summary statistics for main variables.

Before constructing a formal, multivariate regression model, we checked for the potential threat of multicollinearity between some of the previously identified explanatory and control variables by calculating the Pearson Correlation Coefficients between them (see Table 4). The correlation coefficient between the CEO–worker pay gap and the OTEO-worker pay gap (0.960) confirmed that corporate environments with high remuneration dispersion offer high benefits to all top executive team members in comparison to ordinary workers. We also noted a very high correlation between the CEO and the OTEO salaries (0.883), which shows that more highly paid CEOs are strongly capable of negotiating higher remuneration for other members of their executive teams. Table 4 also confirms that most sustainable companies are characterized by wider CEO–worker and OTEO-worker pay gaps. None of the independent variables were characterized by pairwise correlation coefficients higher than 0.372. Thus, a very low general threat of multicollinearity was noted.

We empirically test the hypothesis formulated in Section 2 with the use of the fixed effects model specified in Equation (1):

$$lnCEOTOT_OE_{it} = \alpha + \beta SUSTAIN_{it} + \gamma Controls_{it} + \varepsilon_{it}$$
(1)

where *lnCEOTOT_OE*_{it} is the natural logarithm of the pay gap between the CEO and the average worker for a given company in a given year. *SUSTAIN*_{it} is a binary variable that equals one if a given company was included in a given year in at least one of the following rankings: the Dow Jones Sustainability World Index, the Fortune 500 World's Most Admired Companies list, Newsweek's Top 100 Green Companies in the U.S. ranking, or the UN Global Compact companies list. It equals zero otherwise. *Controls*_{it} is the set of control variables that may affect the pay gap described in Section 3.2 for a given firm in a given year. Industry dummies enable us to control for the industry effect, which is a fixed effect. We used the natural logarithm of the CEO–worker pay gap in model (1) in order to get more symmetrical distribution of the data.

The results of Equation (1) parameter estimation (Table 5) for the full sample of firms offer additional support for the view that there is a positive relationship between being at the forefront of corporate sustainability and the CEO-employee pay differential, which is contrary to our main hypothesis. Regarding the control variables, firms with higher returns on equity, asset bases, and relative market valuations as well as lower volatility of stock market returns and lower research and development expenditures in relation to sales have higher legitimacy to pay their chief executive officers comparatively more. Additionally, CEO-chair duality enables top executives to negotiate more favorable salary conditions in comparison to lower-level employees. Interestingly, the results also show that female CEOs are characterized by a greater pay inequality aversion. Next, we repeated the Equation (1) parameter estimation for financial and non-financial firms separately, since financial firms account for more than a half of our sample. Table 5 shows that a positive relationship between being at the forefront of corporate sustainability and the pay gap also exists in the financial firms subsample. Although for non-financial firms the above relation is not statistically significant, we would still have expected a negative coefficient for SUSTAIN_{it}, which is not the case. In the case of financial firms, the lower volatility of stock market returns, lower research and development expenditures in relation to sales and the CEO's gender were no longer statistically significant factors affecting the CEO-worker pay gap. Furthermore, higher exposure to financial risk for both measures (LEV and RISK) had a negative effect on the pay gap in the case of companies operating outside of the financial sector, with an even stronger female CEO effect than for the whole sample.

	CEOTOT	OTEOTOT	OETOT	CEOTOT_OE	OTEOTOT_OE	SUSTAIN	ROE	LNTA	BV_MV	LEV	RISK	RD_SALES	CEODUAL	GENDER	CEOAGE
CEOTOT	1														
OTEOTOT	0.883 ***	1													
OETOT	0.192 ***	0.283 ***	1												
CEOTOT_OE	0.444 ***	0.354 ***	-0.179 ***	1											
OTEOTOT_OE	0.375 ***	0.368 ***	-0.170 ***	0.960 ***	1										
SUSTAIN	0.349 ***	0.419 ***	0.046 ***	0.181 ***	0.204 ***	1									
ROE	0.041 **	0.048 ***	-0.087 ***	0.091 ***	0.092 ***	0.042 **	1								
LNTA	0.436 ***	0.512 ***	0.074 ***	0.083 ***	0.101 ***	0.343 ***	0.057 ***	1							
BV_MV	-0.097 ***	-0.079 ***	-0.011	-0.160 ***	-0.153 ***	-0.031 *	-0.298 ***	0.154 ***	1						
LEV	0.103 ***	0.111 ***	0.029 *	0.080 ***	0.075 ***	0.043 **	0.034 **	0.140 ***	-0.022	1					
RISK	-0.116 ***	-0.108 ***	0.056 ***	-0.080 ***	-0.079 ***	-0.077 ***	-0.045 **	-0.138 ***	0.372 ***	0.174 ***	1				
RD_SALES	-0.014	-0.016	0.054 ***	-0.015	-0.016	-0.008	0.063 ***	-0.055 ***	-0.034 *	0.103 ***	0.053 ***	1			
CEODUAL	0.173 ***	0.170 ***	0.013	0.057 ***	0.044 **	0.110 ***	-0.005	0.210 ***	0.027	-0.024	-0.068 ***	-0.032 *	1		
GENDER	-0.067 ***	-0.075 ***	-0.050 ***	-0.023	-0.026	-0.051 ***	-0.033 *	-0.094 ***	0.013	0.010	0.098 ***	-0.007	-0.049 ***	1	
CEOAGE	0.065 ***	0.072 ***	-0.039 **	0.033 *	0.018	0.046 ***	-0.005	0.104 ***	0.057 ***	-0.086 ***	-0.025	0.035 **	0.332 ***	-0.069 ***	1

 Table 4. Correlation coefficients.

Variable	Full Sample	Financial Firms	Other Non-Financial Firms
	0.178 ***	0.172 **	0.104
SUSTAIN	(0.063)	(0.083)	(0.098)
POE	0.291 ***	0.527 ***	0.226 ***
KOE	(0.050)	(0.094)	(0.063)
Ι"ΤΑ	0.308 ***	0.308 ***	0.320 ***
LITIA	(0.010)	(0.011)	(0.020)
BV MV	-0.232 ***	-0.153 ***	-0.292 ***
	(0.029)	(0.039)	(0.045)
LEV	-0.029	0.111	-0.274 **
LEV	(0.063)	(0.071)	(0.131)
DICV	-0.008 ***	-0.004	-0.013 ***
RISK	(0.003)	(0.004)	(0.005)
	-0.268 ***	-1.219	-0.278 ***
KD_SALES	(0.073)	(2.237)	(0.080)
CEODUAL	0.121 ***	0.133 ***	0.082
CEODUAL	(0.031)	(0.037)	(0.054)
CENIDER	-0.281 ***	-0.110	-0.421 ***
GENDER	(0.078)	(0.104)	(0.119)
CEOACE	-0.002	-0.004	0.000
CEOAGE	(0.002)	(0.002)	(0.004)
Constant	0.881 ***	0.784 ***	1.451 ***
Constant	(0.152)	(0.180)	(0.267)
Industry dummies	Yes	No	Yes
Adjusted R ²	0.524	0.418	0.485
Observations	3050	1842	1208

Table 5. Pay gap (measured as InCEOTOT_OE) and sustainability.

To ensure that the results reported above are robust across different model specifications, a number of additional sensitivity analyses were undertaken. First, we used the compensation differential between the OTEO and the average worker (OTEOTOT_OE) as an alternative measure of the wage dispersion and re-estimated the Equation (1) parameters. Table 6 presents the results of the regression analysis in the above area. It provides additional empirical support for a positive relationship between being at the forefront of corporate sustainability and the executive-employee pay differential for the full sample and for the subsample of financial firms. For the non-financial firms, the above relation was also positive, but, as in the case of the CEO-employee pay differential, it is not statistically significant. The obtained results for the control variables were generally very similar to those described in the former paragraph, with some exceptions. For instance, in the case of financial firms, higher exposure to financial risk (measured by LEV) was significantly connected with a higher OTEO-employee pay gap. As high financial leverage is generally perceived as a sign of higher financial efficiency in the financial sector, the above is in line with the results obtained for ROE and BV/MV. Furthermore, although CEO-chair duality was still a statistically significant predictor of the OTEO-employee pay differential for both the full sample and the subsample of financial firms, the obtained coefficients were not as statistically significant as in the case of a CEO-employee pay gap. The above might show that CEOs are much more concerned about their own remuneration than they are about the remuneration of the other members of their top management teams. Interestingly, measuring the pay gap with the use of *InCEOTOT_OE*_{it} had higher explanatory power for both the full sample and both subsamples.

Variable	Full Sample	Financial Firms	Other Non-Financial Firms
	0.280 ***	0.355 ***	0.131
SUSTAIN	(0.054)	(0.070)	(0.087)
POE	0.265 ***	0.523 ***	0.204 ***
ROE	(0.043)	(0.079)	(0.056)
LaTA	0.297 ***	0.313 ***	0.227 ***
LNIA	(0.009)	(0.010)	(0.018)
	-0.216 ***	-0.171 ***	-0.250 ***
D v _lvl v	(0.025)	(0.033)	(0.040)
LEV	-0.029	0.125 **	-0.271 **
LEV	(0.055)	(0.059)	(0.117)
DICK	-0.005 *	0.003	-0.012 ***
KI3K	(0.002)	(0.003)	(0.004)
RD_SALES	-0.259 ***	2.718	-0.282 ***
	(0.063)	(1.878)	(0.071)
CEODUAL	0.051 *	0.051 *	0.015
CEODUAL	(0.027)	(0.031)	(0.048)
CENIDER	-0.312 ***	-0.126	-0.470 ***
GENDER	(0.068)	(0.087)	(0.106)
CEOACE	0.001	0.001	0.002
CEOAGE	(0.002)	(0.002)	(0.003)
Constant	0.216	-0.118	1.157 ***
Constant	(0.132)	(0.151)	(0.237)
Industry dummies	Yes	No	Yes
Adjusted R ²	0.564	0.514	0.485
Observations	3050	1842	1208

Table 6. Pay gap (measured as InOTEOTOT_OE) and sustainability.

We also re-estimated the parameters of Equation (1) using an alternative measure of sustainability where *SUSTAIN*_{it} was calculated as the sum of the four binary variables, each representing the inclusion of a given company in a given year in each separate ranking of sustainability (coded as 1 if the company was included and 0 otherwise). Thus, the value of the above variable varied from 0 (if a given company was not included in any of the four rankings in a given year) to 4 (if it was included in all of them at the same time in a given year). The obtained results were similar to those presented in Tables 5 and 6. Additionally, the variance inflation factors (VIFs) were calculated to test for possible multicollinearity among the independent variables. All of the obtained VIF coefficients for all the models described in the study had values lower than 1.75, thus indicating a very low threat of multicollinearity.

5. Discussion and Conclusions

High CEO–employee pay differentials have recently become a matter of increased public concern and scrutiny. As justice in the distribution of income is one of the central pillars of the sustainable development concept, income equity issues should be subject to detailed considerations for any sustainable organization. Thus, a strong commitment to sustainable development at the firm level should be connected with a lower level of tolerance for high pay differentials. Our results show that this is not the case. Specifically, by using data for 415 constituents of the S&P 1500 index over the years 2006–2016, we confirmed a positive relationship between being at the forefront of corporate sustainability and the CEO–employee pay differential. It suggests that although the CEO–worker pay differential should be incorporated into both the corporate sustainability screening criteria used by independent global rankings providers and elaborate leading firms' actions, it does not constitute a relevant determinant of being at the forefront of a "sustainable wave." The above finding is in line with the existing studies showing that the most visible and most extensively promoted environmental and social activities of the most sustainable companies are usually concentrated in their external environments [34,42]. Thus, the topic of the fair distribution of salaries among high profile sustainable companies is simply marginalized or even totally ignored. It confirms that although sustainability rating agencies implement complex filters to identify the companies with the best practices, they might actually include firms which might not fully deserve this label [43]. Furthermore, it also shows that there is still much confusion when it comes about proper and unambiguous typology of corporate sustainability [44]. This stands as a challenge that needs to be urgently addressed by both sustainability ranking providers and leading corporations in the above area. For the former, it means the endorsement and implementation of a limit capping the CEO–worker pay ratio of sustainable companies at a certain, responsible level. For the latter, it is connected with the adoption of a new transparency standard concerning the relative wage range between the top and average earners that ensures a strong commitment to paying competitive and fair wages.

Sustainable corporations were generally much bigger and more financially robust than other companies. As such, they are facing higher environmental and social scrutiny by industry regulators, the media and the general public and thus are motivated toward more intense sustainability oriented behaviors. They were also characterized by lower research and development expenditures in relation to sales. This may show that their sustainable behaviors are not necessarily connected with dedicated work on the implementation of new/modified sustainable products/services/processes (see Table 3).

The inclusion of control variables in our empirical models showed that bigger firms constitute more unequal CEO–worker salary distribution environments. One possible explanation is the fact that the increasing complexity of a company's operations connected with rising size makes it necessary to increase the number of existing managerial levels, which, as a result, leads to higher wage dispersion in a given organization. Firms offering their owners higher returns on their investment (measured by ROE) and firms with higher market valuations in comparison to their book value are also characterized by higher CEO–worker and OTEO–worker gaps. The above is in line with the existing studies showing that better performing companies with higher growth potential offer higher salaries to CEOs and their executive teams [10,37]. Interestingly, the level of intensity of research and development activities, as measured by R&D expenses as a fraction of sales (RD_SALES), negatively affects the pay gap in the corporate sector, especially among non-financial firms. The above finding might suggest that firms must offer their workers higher remuneration in order to attract better qualified workers and that highly qualified workers prefer organizational environments characterized by much lower levels of tolerance for high pay differentials. It also shows that higher innovation performance might actually enhance overall corporate sustainability efforts [45].

From the financial robustness perspective, companies characterized by higher financial leverage and monthly stock market returns volatility, especially in the non-financial sector, tend to have less legitimacy to maintain big pay gaps. From the corporate governance perspective, the empirical findings of this paper show that organizational environments characterized by a more unequal salary distribution are usually managed by CEOs who are also serving as chairmen of the board. Surprisingly, there was not a single woman executive among the CEOs of the most sustainable companies. Since women are much more sensitive to high pay gaps [46,47], this might further increase the CEO–worker salary inequality among firms at the forefront of corporate sustainability. The above also stands as an additional challenge for the providers of the most popular global rankings on responsible social and environmental management in the corporate sector where both gender diversity issues among top management and the fair distribution of salaries should also constitute integral parts of the screening criteria.

Further empirical research is needed to understand additional moderating effects in the pay gap-sustainability relationship (e.g., management attitudes, board diversity and gender composition, and corporate culture), especially since there seems to be a relation between a CEO's personal values and corporate social responsibility (CSR) [48–50], which can significantly affect the decision-making process and remuneration schemes in the corporate world. Some existing studies also showed that environmentally and socially responsible corporations tend to offer their employees more generous, substitute non-wage compensation (e.g., flexible working hours for a vulnerable group of workers),

which can partially offset existing pay gaps in a company [51]. Thus, it might be fruitful for future research to try to assess the value of the non-monetary compensation part provided by the most CSR oriented companies and re-examine the pay gap-sustainability link by taking it into consideration. As our study focused on a limited number of U.S. companies over the period 2006–2016, subsequent studies should attempt to examine the pay gap–sustainability link across a wider spectrum of firms that are more equally distributed among different sectors and located in different countries/regions. Furthermore, as we relied on compensation of only those executives who were covered in Standard and Poor's ExecuComp database to calculate our CEO–worker pay gap differential, there is a risk of its over- or underestimation.

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References

- 1. Fair, R.C. The optimal distribution of income. Q. J. Econ. 1971, 85, 551–579. [CrossRef]
- 2. Drucker, P. Is executive pay excessive? *Wall Str. J.* **1977**, 23, 20.
- 3. IPS. *Income Inequality in the United States*; Institute for Policy Studies: Washington, DC, USA, 2017; Available online: https://inequality.org/facts/income-inequality/ (accessed on 5 March 2018).
- 4. McCall, J.J. Assessing American Executive Compensation: A Cautionary Tale for Europeans. *Bus. Ethics A Eur. Rev.* **2004**, *13*, 243–254. [CrossRef]
- Deloitte. Income Inequality in the United States: What do We Know and What Does it Mean? Deloitte Insights, 2017. Available online: https://www2.deloitte.com/insights/us/en/economy/issues-by-the-numbers/ july-2017/rising-income-inequality-gap-united-states.html (accessed on 5 March 2018).
- 6. Spangenberg, J.H.; Omann, I.; Hinterberger, F. Sustainable growth criteria. Minimum benchmarks and scenarios for employment and the environment. *Ecol. Econ.* **2002**, *42*, 429–443. [CrossRef]
- 7. Martins, N.O. Inequality, sustainability and Piketty's capital. Ecol. Econ. 2015, 118, 287–291. [CrossRef]
- 8. Welford, R. Corporate Social Responsibility in Europe and Asia: Critical Elements and Best Practice. *Corp. Soc. Rev.* **2005**, *13*, 31–47.
- 9. Putnam, H.; Walsh, V. The End of Value-Free Economics; Routledge: London, UK; New York, NY, USA, 2012.
- 10. Henderson, A.D.; Fredrickson, J.W. Top management team coordination needs and the CEO pay gap: A competitive test of economic and behavioral views. *Acad. Manag. J.* **2001**, *44*, 96–117.
- 11. Werner, S.; Tosi, H.L.; Gomez-Mejia, L. Organizational governance and employee pay: How ownership structure affects the firm's compensation strategy. *Strat. Manag. J.* **2005**, *26*, 377–384. [CrossRef]
- 12. Lips, H.M. The Gender Pay Gap: Challenging the Rationalizations. Perceived Equity, Discrimination, and the Limits of Human Capital Models. *Sex Roles* **2013**, *68*, 169–185. [CrossRef]
- 13. Kiatpongsan, S.; Norton, M.I. How Much (More) Should CEOs Make? A Universal Desire for More Equal Pay. *Perspect. Psychol. Sci.* **2014**, *9*, 587–593. [CrossRef]
- 14. Heyman, F. Pay inequality and firm performance: Evidence from matched employer–employee data. *Appl. Econ.* **2005**, *37*, 1313–1327. [CrossRef]
- 15. Dai, Y.; Kong, D.; Xu, J. Does fairness breed efficiency? Pay gap and firm productivity in China. *Int. Rev. Econ. Financ.* **2017**, *48*, 406–422. [CrossRef]
- Bossel, H. Policy assessment and simulation of actor orientation for sustainable development. *Ecol. Econ.* 2000, *35*, 337–355. [CrossRef]
- 17. Garcia, F.; Gonzalez-Bueno, J.; Oliver, J.; Riley, N. Selecting Socially Responsible Portfolios: A Fuzzy Multicriteria Approach. *Sustainability* **2019**, *11*, 2496. [CrossRef]
- Gangi, F.; Varrone, N. Screening activities by socially responsible funds: A matter of agency? J. Clean. Prod. 2018, 197, 842–855. [CrossRef]

- Arribas, I.; Espinós-Vañó, M.D.; García, F.; Tamosiuniene, R. Negative screening and sustainable portfolio diversification. *Int. J. Enterp. Sustain. Issues* 2019, 6, 1566–1586.
- 20. Wilkinson, R.G.; Pickett, K.E. Income inequality and social disfunction. *Annu. Rev. Sociol.* **2009**, *35*, 493–511. [CrossRef]
- 21. Templet, P. Equity and sustainability: An empirical analysis. *Soc. Nat. Resour. Int. J.* **1995**, *8*, 509–523. [CrossRef]
- 22. MacKerron, G.; Mourato, S. Life satisfaction and air quality in London. *Ecol. Econ.* **2009**, *68*, 1441–1453. [CrossRef]
- 23. Gifford, R.; Nilsson, A. Personal and social factors that influence pro-environmental concern and behaviour: A Review. *Int. J. Psychol.* **2014**, *49*, 141–157. [CrossRef]
- 24. Xie, Z.; Lin, R.; Mi, J.; Li, N. Improving Enterprises' Cross-Border M&A Sustainability in the Globalization Age—Research on Acquisition and Application of the Foreign Experience. *Sustainability* **2019**, *11*, 3180.
- 25. Torras, M.; Boyce, J.K. Income, inequality, and pollution: A reassessment of the environmental Kuznets Curve. *Ecol. Econ.* **1998**, *25*, 147–160. [CrossRef]
- Morello-Forsh, R.; Pastor, M.; Sadd, J. Environmental Justice and Southern California's "Riskscape". The Distribution of Air Toxics Exposures and Health Risks among Diverse Communities. *Urban Aff. Rev.* 2001, *36*, 551–578. [CrossRef]
- 27. Heerink, N.; Mulatu, A.; Bulte, E. Income inequality and the environment: Aggregation bias in environmental Kuznets curves. *Ecol. Econ.* 2001, *38*, 359–367. [CrossRef]
- 28. Agyeman, J. Toward a 'just' sustainability? Contin. J. Media Cult. Stud. 2008, 22, 751-756. [CrossRef]
- 29. Boyce, J.K. Is inequality bad for the environment? Res. Soc. Probl. Public Pol. 2008, 15, 267–288.
- Gómez-Bezares, F.; Przychodzen, W.; Przychodzen, J. Bridging the Gap: How Sustainable Development Can Help Companies Create Shareholder Value and Improve Financial Performance. *Bus. Ethics A Eur. Rev.* 2017, 26, 1–17. [CrossRef]
- 31. Ims, K.J.; Jacob, L.; Pedersen, T.; Zsolnai, L. How Economic Incentives May Destroy Social, Ecological and Existential Values: The Case of Executive Compensation. *J. Bus. Ethics* **2014**, *123*, 353–360. [CrossRef]
- 32. Bendell, J. *Barricades and Boardrooms: A Contemporary History of the Corporate Accountability Movement;* Technology, Business and Society Programme Paper No. 13; UNRISD: Geneva, Switzerland, 2004.
- 33. Sum, N.L. From "new constitutionalism" to "new ethicalism": Global business governance and the discourses and practices of corporate social responsibility. Presented at the Paper Prepared for the European Consortium for Political Research Joint Sessions, Workshop 24: Transnational Private Governance in the Global Political Economy, Granada, Spain, 14–19 April 2005.
- 34. Utting, P. CSR and Equality. Third World Q. 2007, 28, 697–712. [CrossRef]
- 35. Choe, C.; Tian, G.Y.; Yin, X. CEO power and the structure of CEO pay. *Int. Rev. Financ. Anal.* **2014**, *35*, 237–248. [CrossRef]
- Powell, G.N.; Butterfield, D.A.; Parent, J.D. Gender and managerial stereotypes: Have the times changed? J. Manag. 2002, 28, 177–193. [CrossRef]
- 37. Rost, K.; Weibel, A. CEO Pay from a Social Norm Perspective: The Infringement and Reestablishment of Fairness Norms. *Corp. Gov. Int. Rev.* **2013**, *21*, 351–372. [CrossRef]
- 38. Conyon, M.J.; Murphy, K.J. The Prince and the Pauper? CEO Pay in the United States and United Kingdom. *Econ. J.* **2000**, *110*, 640–671. [CrossRef]
- McKnight, P.J.; Tomkins, C.; Weir, C.; Hobson, D. CEO Age and Top Executive Pay: A UK Empirical Study. J. Manag. Gov. 2000, 4, 173–187. [CrossRef]
- 40. Baker, G.P.; Jensen, M.C.; Murphy, K.J. Compensation and Incentives: Practice vs. Theory. *J. Financ.* **1988**, *43*, 593–616. [CrossRef]
- 41. Faleye, O.; Reis, E.; Venkateswaran, A. The determinants and effects of CEO-employee pay ratios. *J. Bank. Financ.* **2013**, *37*, 3258–3272. [CrossRef]
- 42. Kilgour, M.A. The UN Global Compact and substantive equality for women: Revealing a 'well hidden' mandate. *Third World Q.* 2008, *28*, 751–773. [CrossRef]
- 43. Forcadell, F.J.; Aracil, E.; Úbeda, F. The Influence of Innovation on Corporate Sustainability in the International Banking Industry. *Sustainability* **2019**, *11*, 3210. [CrossRef]
- 44. Arribas, I.; Espinós-Vañó, M.D.; García, F.; Morales-Bañuelos, P.B. The inclusion of socially irresponsible companies in sustainable stock indices. *Sustainability* **2019**, *11*, 2047. [CrossRef]

- 45. Silvestre, W.J.; Antunes, P.; Filho, W.L. The corporate sustainability typology: Analysing sustainability drivers and fostering sustainability at enterprises. *Technol. Econ. Dev. Econ.* **2018**, *24*, 513–533. [CrossRef]
- 46. Andreoni, J.; Vesterlund, L. Which is the fair sex? Gender differences in altruism. *Q. J. Econ.* **2001**, *116*, 293–312. [CrossRef]
- 47. Dufwenberg, M.; Muren, A. Gender composition in teams. J. Econ. Behav. Organ. 2006, 61, 50–54. [CrossRef]
- 48. Chin, M.K.; Hambrick, D.C.; Trevino, L.K. Political ideologies of CEOs: The influence of executives' values on corporate social responsibility. *Adm. Sci. Q.* **2013**, *58*, 97–232. [CrossRef]
- 49. Chin, M.K.; Semadeni, M. CEO political ideologies and pay egalitarianism within top management teams. *Strat. Manag. J.* **2017**, *38*, 1608–1625. [CrossRef]
- 50. Abatecola, G.; Cristofaro, M. Ingredients of Sustainable CEO Behaviour: Theory and Practice. *Sustainability* **2019**, *11*, 1950. [CrossRef]
- Bolvig, I. Firm-provided social concerns—Just another compensating wage differentials story? *Int. J. Manpow.* 2005, 26, 673–704. [CrossRef]



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